

Abstract

[Abstract]

The amount and area of irradiation of excited species to the surface of a workpiece can be increased, the irradiation can be uniformly performed on the whole surface, and the loss of effective excited species is suppressed, so that the treating performance and efficiency can be remarkably improved.

A pulse voltage is applied between discharge electrodes (4) which are opposingly positioned, to produce a corona discharge between pointed ends of the discharge electrodes, and the surface of a workpiece is irradiated with excited species including plasma produced by the corona discharge, thereby treating the surface. The discharge electrodes (4) are configured by a central electrode (11) and two peripheral electrodes (12) (13) opposingly placed in a state where the central electrode (11) is interposed between the peripheral electrodes. The pulse voltage is alternately applied by pulse voltage applying means (16) configured with using an even voltage doubler rectifier circuit to the central electrode (11) and two peripheral electrodes (12) (13) of the discharge electrodes (4).

The corona discharge is alternately generated between one of the two peripheral electrodes (12) (13) and the central electrode (11).